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LAKE DECATUR, MACON COUNTY, ILLINOIS

Pacific Northwest Environmental Research Laboratory

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16. ABSTRACT
Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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NATIONAL EUTROPHICATION SURVEY

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REPORT
ON
LAKE DECATUR
MACON COUNTY
ILLINOIS
EPA REGION V
WORKING PAPER No. 302

WITH THE COOPERATION OF THE
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
AND THE
ILLINOIS NATIONAL GUARD

JUNE, 1975

CONTENTS

	Page
Foreword	ii
List of Illinois Study Lakes	iv
Lake and Drainage Area Map	v
Sections	
I. Conclusions	1
II. Lake and Drainage Basin Characteristics	4
III. Lake Water Quality Summary	5
IV. Nutrient Loadings	9
V. Literature Reviewed	15
VI. Appendices	16

FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the Illinois Environmental Protection Agency for professional involvement and to the Illinois National Guard for conducting the tributary sampling phase of the Survey.

Dr. Richard H. Briceland, Director of the Illinois Environmental Protection Agency; and Ronald M. Barganz, State Survey Coordinator, and John J. Forneris, Manager of Region III, Field Operations Section of the Division of Water Pollution Control, provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

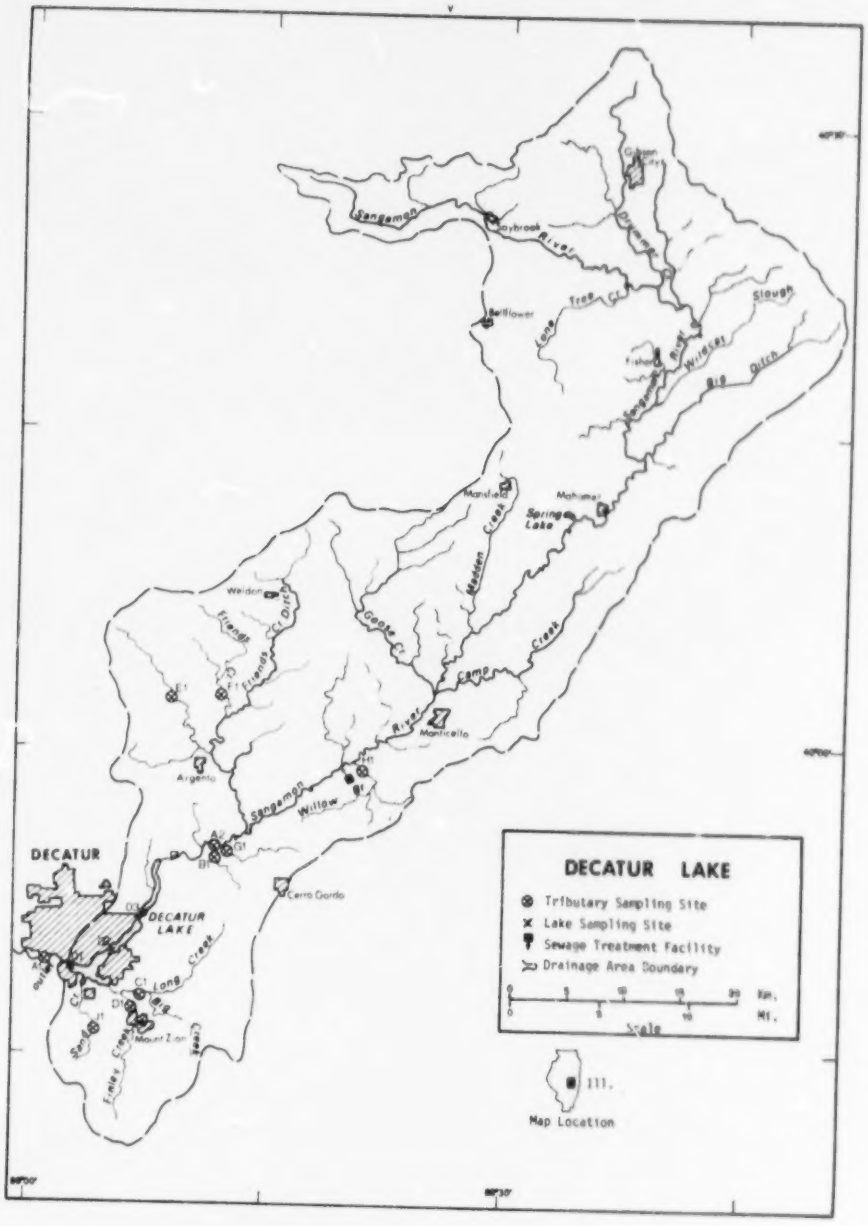
Major General Harold R. Patton, the Adjutant General of Illinois, and Project Officer Colonel Daniel L. Fane, who directed the volunteer efforts of the Illinois National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF ILLINOIS

LAKE NAME	COUNTY
Baldwin	Randolph
Bloomington	McLean
Carlyle	Bond, Clinton, Fayette
Cedar	Lake
Charleston	Coles
Coffeen	Montgomery
Crab Orchard	Jackson, Williamson
Decatur	Macon
DePue	Bureau
East Loon	Lake
Fox	Lake
Grass	Lake
Highland Silver	Madison
Holiday	LaSalle
Horseshoe	Madison
Long	Lake
Lou Yaeger	Montgomery
Marie	Lake
Old Ben Mine	Franklin
Pistakee	Lake, McHenry
Raccoon	Marion
Rend	Franklin, Jefferson
Sangchris	Christian
Shelbyville	Moultrie, Shelby
Slocum	Lake
Springfield	Sangamon
Storey	Knox
Vandalia	Fayette
Vermilion	Vermilion
Wee Ma Tuk	Fulton
Wonder	McHenry


DECATUR LAKE
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Drainage Area Boundary
Km.
Mi.
Scale
Ill.
Map Location
DECATUR
DECATUR LAKE
Sangamon River
Willow Creek
Long Creek
Spring Lake
Mahomet
Mansfield
Monticello
Cerro Gordo
Argenta
Weldon
Bellflower
Goose Creek
Camp Creek
Friends Creek
Big Ditch
Slough
Mount Zion
Forest Creek

LAKE DECATUR

STORET NO. 1714

I. CONCLUSIONS

A. Trophic Condition:

Survey data show that Lake Decatur is eutrophic. It ranked 28th in overall trophic quality when the 31 Illinois lakes sampled in 1973 were compared using a combination of six parameters*. Eighteen of the lakes had less median total phosphorus, 20 had less and one had the same median dissolved phosphorus, 26 had less median inorganic nitrogen, 20 had less mean chlorophyll a, and 14 had greater mean Secchi disc transparency. Marked depression of dissolved oxygen with depth occurred at sampling station 1 in August, 1973.

Survey limnologists noted slight turbidity at all sampling times and the occurrence of emergent vegetation in the northern shallow areas of the lake.

B. Rate-Limiting Nutrient:

A significant loss of orthophosphorus occurred in the assay sample between the time of collection and the beginning of the assay, and the results are not representative of conditions in the lake at the time the sample was taken.

The lake data indicate phosphorus limitation at all sampling times.

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* See Appendix A.

C. Nutrient Controllability:

1. Point sources--The phosphorus contributions of measured point sources amounted to 8.1% of the total load during the sampling year. The Monticello and Mt. Zion wastewater treatment plants each contributed about 4% of the load.

The present phosphorus loading rate of 9.15 $g/m^2/yr$ is nearly seven times that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a eutrophic rate (see page 14). However, the mean hydraulic retention time of Lake Decatur is a short 11 days, and Vollenweider's model probably does not apply. Nonetheless, the existing trophic condition of the lake is evidence of excessive nutrient loads.

On the basis of Survey data, it appears that the trophic condition of Lake Decatur will continue to deteriorate unless the present loading rate is reduced. Because of this, and because the lake is phosphorus limited, all phosphorus inputs should be minimized to the greatest practicable degree.

There are point sources impacting the Sangamon River above station A-2 that potentially could contribute nutrient loads to Lake Decatur (Miller, 1974). However, these sources are located beyond the 40-kilometer limit of the Survey* and for

* See Working Paper No. 175, "...Survey Methods, 1973-1976".

this reason were not included in this report. Even so, nutrients from these sources most likely would reach the lake eventually, and these sources also should be considered in any program to reduce phosphorus inputs to Lake Decatur.

2. Non-point sources--The phosphorus load from non-point sources accounted for 91.9% of the total load. The phosphorus loads of the gaged tributaries ranged from 74.9% of the total load (Sangamon River) to less than 1% (Sand Creek and Unnamed Creek B-1). Big Creek and Finley Creek were estimated to have contributed 4.4% and 2.4% of the total, respectively. The ungaged tributaries accounted for 5.3% of the phosphorus load reaching the lake.

Excluding those sampled for land-use studies, the phosphorus export rates of the Lake Decatur tributaries ranged from 31 to 41 kg/km^2/yr with a mean rate of 35 kg/km^2/yr (see page 13). It will be noted that these rates compare quite well with the export rates of the unimpacted tributaries sampled for land-use studies (mean of 30 kg/km^2/yr). The somewhat higher export rate of the Sangamon River may indicate the impact of the point sources beyond the Survey limit noted above.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Lake Morphometry††:

1. Surface area: 11.35 kilometers^2.
2. Mean depth: 1.4 meters.
3. Maximum depth: >4.6 meters.
4. Volume: 15.893 x 10^6 m^3.
5. Mean hydraulic retention time: 11 days.

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
Sangamon River	2,004.7	14.3
Unnamed Creek (B-1)	21.9	0.1
Big Creek	121.7	0.8
Finley Creek	68.6	0.4
Sand Creek	19.9	0.1
Minor tributaries & immediate drainage -	181.2	1.7
Totals	2,418.0	17.4

2. Outlet -

Sangamon River	2,429.4**	17.4

C. Precipitation***:

1. Year of sampling: 159.0 centimeters.
2. Mean annual: 102.2 centimeters.

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† Table of metric conversions--Appendix B.
†† Forneris, 1973.
* For limits of accuracy, see Working Paper No. 175.
** Includes area of lake.
*** See Working Paper No. 175.

III. LAKE WATER QUALITY SUMMARY

Lake Decatur was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from three stations on the lake and from a number of depths at each station (see map, page v). During each visit, a single depth-integrated (4.6 m or near bottom to surface) sample was composited from the three stations for phytoplankton identification and enumeration; and during the first visit, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 4.6 meters at station 1, 3.0 meters at station 2, and 1.5 meters at station 3.

The results obtained are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR LAKE DECATUR
STORET CODE 1714

PARAMETER	1ST SAMPLING (5/ 8/73) 3 SITES RANGE	MEAN	MEDIAN	2ND SAMPLING (8/ 9/73) 3 SITES RANGE	MEAN	MEDIAN	3RD SAMPLING (10/18/73) 3 SITES RANGE	MEAN	MEDIAN
TEMP (C)	14.9 - 15.9	15.4	15.4	24.1 - 28.1	27.0	27.8	17.3 - 18.5	17.9	17.9
DISS OXY (MG/L)	9.0 - 9.5	9.2	9.2	0.5 - 10.4	6.1	6.8	7.6 - 13.2	9.2	8.0
CNDCTVY (MCROMO)	530. - 612.	579.	600.	442. - 586.	519.	535.	412. - 492.	435.	425.
PH (STAND UNITS)	8.2 - 8.3	8.2	8.2	7.3 - 8.5	8.0	8.1	7.9 - 8.5	8.1	8.0
TOT ALK (MG/L)	195. - 230.	210.	208.	183. - 280.	232.	260.	200. - 244.	212.	207.
TOT P (MG/L)	0.099 - 0.149	0.124	0.125	0.064 - 0.155	0.112	0.107	0.111 - 0.173	0.143	0.147
ORTHO P (MG/L)	0.060 - 0.101	0.078	0.070	0.013 - 0.067	0.032	0.021	0.039 - 0.062	0.056	0.060
NO2+NO3 (MG/L)	6.530 - 7.710	7.194	7.450	2.810 - 4.130	3.631	3.650	0.040 - 1.200	0.790	0.870
AMMONIA (MG/L)	0.080 - 0.120	0.102	0.100	0.030 - 0.180	0.086	0.070	0.040 - 0.060	0.043	0.040
KJEL N (MG/L)	0.500 - 0.600	0.512	0.500	0.900 - 1.500	1.157	1.000	0.400 - 1.000	0.633	0.550
INORG N (MG/L)	6.650 - 7.810	7.296	7.535	2.990 - 4.200	3.717	3.720	0.080 - 1.240	0.833	0.915
TOTAL N (MG/L)	7.100 - 8.210	7.706	7.950	3.810 - 5.430	4.789	4.650	1.040 - 1.700	1.423	1.465
CHLRPYL A (UG/L)	3.0 - 35.9	14.7	5.3	41.7 - 193.8	92.9	43.1	6.3 - 33.9	21.4	24.0
SECCHI (METERS)	0.4 - 0.5	0.4	0.4	0.4 - 1.2	0.6	0.4	0.5 - 0.5	0.5	0.5

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal units per ml
05/08/73	1. Melosira sp.	256
	2. Scenedesmus sp.	160
	3. Cryptomonas sp.	160
	4. Cyclotella sp. & Stephanodiscus sp.	160
	5. Dactylococcopsis sp.	64
	Other genera	320
	Total	1,120
08/09/73	1. Centric diatoms	1,116
	2. Nitzschia sp.	950
	3. Flagellates	868
	4. Melosira sp.	678
	5. Euglena sp.	271
	Other genera	1,190
	Total	5,073
10/18/73	1. Nitzschia sp.	1,855
	2. Cyclotella sp. & Stephanodiscus sp.	909
	3. Melosira sp.	795
	4. Merismopedia sp.	719
	5. Flagellates	416
	Other genera	1,856
	Total	6,550

2. Chlorophyll *a* -

Sampling Date	Station Number	Chlorophyll *a* (µg/l)
05/08/73	01	35.9
	02	5.3
	03	3.0
08/09/73	01	193.8
	02	43.1
	03	41.7
10/18/73	01	6.3
	02	24.0
	03	33.9

C. Limiting Nutrient Study:

A 74% loss of orthophosphorus occurred in the assay sample between the time of collection and the beginning of the assay, and the assay results are not representative of conditions in the lake at the time the sample was taken.

The lake data indicate phosphorus limitation at all sampling times; i.e., the mean inorganic nitrogen to orthophosphorus ratios were 15 to 1 or greater, and phosphorus limitation would be expected.

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the Illinois National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff month of March when two samples were collected. Sampling was begun in June, 1973, and was completed in May, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Illinois District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loads shown are those measured minus point-source loads, if any.

Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the means of the nutrient loads, in $kg/km^2/year$, at land-use stations E-1, F-1, G-1, and H-1 (see page 13) and multiplying the means by the ZZ area in km^2.

The operators of the Monticello and Mt. Zion wastewater treatment plants provided monthly effluent samples and corresponding flow data.

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* See Working Paper No. 175.

A. Waste Sources:

1. Known muncipal* -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
Monticello	4,300	act. sludge + pond	2,104.5	Sangamon River
Mt. Zion	3,000	act. sludge + pond	1,447.8	Finley Creek

2. Known industrial - None

* Treatment plant questionnaires.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr	% of total
a. Tributaries (non-point load) -		
Sangamon River	81,425	78.4
Unnamed Creek (B-1)	670	0.6
Big Creek	4,535	4.4
Finley Creek	2,535	2.4
Sand Creek	610	0.6
b. Minor tributaries & immediate drainage (non-point load) -	5,480	5.3
c. Known municipal STP's -		
Monticello	4,215	4.1
Mt. Zion	4,175	4.0
d. Septic tanks - Unknown	-	-
e. Known industrial - None	-	-
f. Direct precipitation* -	200	0.2
Total	103,845	100.0

2. Outputs -

Lake outlet - Sangamon River 77,020

3. Net annual P accumulation - 26,825 kg.

* See Working Paper No. 175.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/ yr	% of total
a. Tributaries (non-point load) -		
Sangamon River	2,236,060	82.2
Unnamed Creek (B-1)	27,130	1.0
Big Creek	127,665	4.7
Finley Creek	74,725	2.7
Sand Creek	24,110	0.9
b. Minor tributaries & immediate drainage (non-point load) -	209,605	7.7
c. Known municipal STP's -		
Monticello	6,505	0.2
Mt. Zion	3,905	0.1
d. Septic tanks - Unknown	-	-
e. Known industrial - None	-	-
f. Direct precipitation* -	12,255	0.5
Total	2,718,960	100.0

2. Outputs -

Lake outlet - Sangamon River 3,242,030

3. Net annual N loss - 523,070 kg.

* See Working Paper No. 175.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km^2/yr	kg N/km^2/yr
Sangamon River	41	1,115
Unnamed Creek (B-1)	31	1,239
Big Creek	37	1,049
Finley Creek	37	1,089
Sand Creek	31	1,212
Unnamed Creek (E-1)*	36	1,337
Friends Creek*	21	1,031
Unnamed Creek (G-1)*	35	1,045
Willow Branch*	29	1,214

* These tributaries were sampled for land-use studies. The export rates are presented here for comparison. Nutrient loading estimates for these streams are included in the estimates at station A-2 on the Sangamon River.

E. Yearly Loading Rates:

In the following table, the existing phosphorus loading rates are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" rate is the rate at which the receiving water would become eutrophic or remain eutrophic; his "permissible" rate is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic rate would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m^2/yr	9.15	2.36	239.6	loss*

Vollenweider loading rates for phosphorus ($g/m^2/yr$) based on mean depth and mean hydraulic retention time for Lake Decatur:

"Dangerous" (eutrophic rate)	1.32
"Permissible" (oligotrophic rate)	0.66

* There was an apparent loss of nitrogen from Lake Decatur during the sampling year. This may have been due to nitrogen fixation in the lake, solubilization of previously sedimented nitrogen, recharge with nitrogen-rich ground water, or unknown and unsampled point sources discharging directly to the lake. Whatever the cause, a similar nitrogen loss has occurred at Shagawa Lake, Minnesota, which has been intensively studied by EPA's National Eutrophication and Lake Restoration Branch (Malueg et al., 1975).

V. LITERATURE REVIEWED

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VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500- MEAN SEC	MEAN CHLORA	IS- MIN DO	MEDIAN DISS ORTHO P
1703	LAKE BLOOMINGTON	0.050	5.730	484.667	26.200	14.800	0.020
1706	LAKE CARLYLE	0.084	1.270	477.889	17.367	11.000	0.032
1708	LAKE CHARLESTON	0.160	4.680	490.667	12.000	8.400	0.065
1711	COFFEEN LAKE	0.032	0.260	456.222	7.700	14.900	0.012
1712	CRAB ORCHARD LAKE	0.082	0.200	482.222	59.867	13.800	0.013
1714	LAKE DECATUR	0.129	3.750	479.571	43.000	14.500	0.062
1725	LONG LAKE	0.704	1.190	482.667	49.333	8.800	0.398
1726	LAKE LOU YAEGER	0.186	1.600	489.583	10.662	11.400	0.076
1727	LAKE MARIE	0.098	0.370	467.667	39.533	14.700	0.057
1733	PISTAKEE LAKE	0.203	0.370	485.667	75.867	7.000	0.062
1735	REND LAKE	0.071	0.210	471.500	23.533	12.700	0.012
1739	LAKE SHELBYVILLE	0.062	3.290	461.333	17.161	14.800	0.019
1740	SILVER LAKE (HIGHLAND)	0.226	0.970	489.500	5.822	14.800	0.057
1742	LAKE SPRINGFIELD	0.104	3.265	483.385	13.013	10.800	0.059
1748	VERMILION LAKE	0.109	4.695	481.500	31.150	14.200	0.050
1750	WONDER LAKE	0.426	0.890	486.000	98.533	7.800	0.132
1751	LAKE STORY	0.072	2.510	459.333	17.250	14.800	0.021
1752	DEPUE LAKE	0.438	4.050	490.000	58.833	7.600	0.276
1753	LAKE SANGCHRIS	0.050	1.970	475.417	19.292	14.500	0.009
1754	LAKE HOLIDAY	0.167	3.135	485.167	51.217	7.200	0.046
1755	FOX LAKE	0.214	0.375	486.167	83.850	8.800	0.083
1756	GRASS LAKE	0.301	0.820	481.000	83.500	5.900	0.093
1757	EAST LOON LAKE	0.076	0.120	450.000	22.300	14.900	0.014
1758	SLOCUM LAKE	0.865	0.200	487.333	221.100	5.800	0.362
1759	CEDAR LAKE	0.029	0.170	400.333	5.767	12.800	0.013
1761	LAKE WEMATUK	0.069	1.770	466.333	7.967	14.500	0.031
1762	RACCOON LAKE	0.106	0.310	484.333	19.217	13.800	0.020
1763	BALDWIN LAKE	0.044	0.140	461.167	11.333	13.200	0.007

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500- MEAN SEC	MEAN CHLORA	15- MIN DO	MEDIAN DISS ORTHO P
1764	LAKE VANDALIA	0.116	0.480	478.111	11.276	14.800	0.023
1765	OLD BEN MINE RESERVOIR	0.930	0.205	478.333	31.433	11.200	0.575
1766	HORSESHOE LAKE	0.127	0.705	482.833	182.250	6.800	0.018

81

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
1703	LAKE BLOOMINGTON	88 (26)	0 (0)	80 (24)	47 (14)	13 (2)	68 (20)	296
1706	LAKE CARLYLE	63 (19)	40 (12)	63 (19)	63 (19)	63 (19)	53 (16)	345
1708	LAKE CHARLESTON	37 (11)	7 (2)	0 (0)	77 (23)	77 (23)	27 (8)	225
1711	COFFEEN LAKE	97 (29)	77 (23)	93 (28)	93 (28)	2 (0)	92 (27)	454
1712	CRAB ORCHARD LAKE	67 (20)	90 (27)	43 (13)	20 (6)	42 (12)	85 (25)	347
1714	LAKE DECATUR	40 (12)	13 (4)	53 (16)	33 (10)	30 (8)	32 (9)	201
1725	LONG LAKE	7 (2)	43 (13)	40 (12)	30 (9)	72 (21)	3 (1)	195
1726	LAKE LOU YAEGER	30 (9)	37 (11)	7 (2)	87 (26)	57 (17)	23 (7)	241
1727	LAKE MARIE	60 (18)	68 (20)	73 (22)	37 (11)	23 (7)	42 (12)	303
1733	PISTAKEE LAKE	27 (8)	68 (20)	23 (7)	13 (4)	90 (27)	32 (9)	253
1735	REND LAKE	77 (23)	80 (24)	70 (21)	50 (15)	53 (16)	92 (27)	422
1739	LAKE SHELBYVILLE	83 (25)	17 (5)	83 (25)	70 (21)	13 (2)	73 (22)	339
1740	SILVER LAKE (HIGHLAND)	20 (6)	47 (14)	10 (3)	97 (29)	13 (2)	42 (12)	229
1742	LAKE SPRINGFIELD	53 (16)	20 (6)	33 (10)	73 (22)	67 (20)	37 (11)	283
1748	VERMILION LAKE	50 (15)	3 (1)	47 (14)	43 (13)	37 (11)	47 (14)	227
1750	WONDER LAKE	13 (4)	50 (15)	20 (6)	7 (2)	80 (24)	13 (4)	183
1751	LAKE STORY	73 (22)	27 (8)	90 (27)	67 (20)	13 (2)	63 (19)	333
1752	DEPUE LAKE	10 (3)	10 (3)	3 (1)	23 (7)	83 (25)	10 (3)	139
1753	LAKE SANGCHRIS	88 (26)	30 (9)	67 (20)	57 (17)	30 (8)	97 (29)	369
1754	LAKE HOLIDAY	33 (10)	23 (7)	27 (8)	27 (8)	87 (26)	50 (15)	247
1755	FOX LAKE	23 (7)	63 (19)	17 (5)	17 (5)	72 (21)	20 (6)	212
1756	GRASS LAKE	17 (5)	53 (16)	50 (15)	10 (3)	97 (29)	17 (5)	244
1757	EAST LOON LAKE	70 (21)	100 (30)	97 (29)	53 (16)	2 (0)	77 (23)	349
1758	SLOCUM LAKE	3 (1)	87 (26)	13 (4)	0 (0)	100 (30)	7 (2)	210
1759	CEDAR LAKE	100 (30)	93 (28)	100 (30)	100 (30)	50 (15)	85 (25)	528
1761	LAKE WEMATUK	80 (24)	33 (10)	77 (23)	90 (27)	30 (8)	57 (17)	367
1762	RACCOON LAKE	57 (17)	73 (22)	30 (9)	60 (18)	42 (12)	68 (20)	330
1763	BALDWIN LAKE	93 (28)	97 (29)	87 (26)	80 (24)	47 (14)	100 (30)	504

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500- MEAN SEC	MEAN CHLORA	1S- MIN DO	MEDIAN DISS ORTHO P	INDEX NO
1764	LAKE VANDALIA	47 (14)	60 (18)	60 (18)	83 (25)	13 (2)	60 (18)	323
1765	OLD BEN MINE RESERVOIR	0 (0)	83 (25)	57 (17)	40 (12)	60 (18)	0 (0)	240
1766	HORSESHOE LAKE	43 (13)	57 (17)	37 (11)	3 (1)	93 (28)	80 (24)	313

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	1759	CEDAR LAKE	528
2	1763	BALDWIN LAKE	504
3	1711	COFFEEN LAKE	454
4	1735	REND LAKE	422
5	1757	EAST LOON LAKE	399
6	1753	LAKE SANGCHRIS	369
7	1761	LAKE WENATUK	367
8	1712	CRAB ORCHARD LAKE	347
9	1706	LAKE CARLYLE	345
10	1739	LAKE SHELBYVILLE	339
11	1751	LAKE STORY	333
12	1762	RACCOON LAKE	330
13	1764	LAKE VANDALIA	323
14	1766	HORSESHOE LAKE	313
15	1727	LAKE MARIE	303
16	1703	LAKE BLOOMINGTON	296
17	1742	LAKE SPRINGFIELD	283
18	1733	PISTAKEE LAKE	253
19	1754	LAKE HOLIDAY	247
20	1756	GRASS LAKE	244
21	1726	LAKE LOU YAEGER	241
22	1765	OLD BEN MINE RESERVOIR	240
23	1740	SILVER LAKE (HIGHLAND)	229
24	1748	VERMILION LAKE	227
25	1708	LAKE CHARLESTON	225
26	1755	FOX LAKE	212
27	1758	SLOCUM LAKE	210
28	1714	LAKE DECATUR	201

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
29	1725	LONG LAKE	195
30	1750	WONDER LAKE	183
31	1752	DEPUE LAKE	139

APPENDIX B

CONVERSIONS FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR ILLINOIS 10/23/75

LAKE CODE 1714 LAKE DECATUR

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 2429.4

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1714A1	2429.4	17.95	23.25	31.15	32.56	34.83	18.75	12.32	6.85	5.32	6.60	9.15	10.65	17.41
1714A2	2004.7	14.84	19.31	25.54	26.90	28.60	15.46	10.11	5.55	4.28	5.32	7.45	8.72	14.31
1714B1	21.9	0.13	0.21	0.26	0.26	0.21	0.18	0.10	0.05	0.04	0.04	0.06	0.07	0.13
1714C1	121.7	0.79	1.18	1.47	1.51	1.19	1.00	0.60	0.31	0.22	0.24	0.35	0.42	0.77
1714D1	68.6	0.43	0.67	0.82	0.84	0.66	0.56	0.33	0.17	0.12	0.13	0.19	0.23	0.43
1714E1	55.4	0.35	0.54	0.66	0.68	0.53	0.45	0.27	0.14	0.09	0.10	0.15	0.18	0.34
1714F1	45.1	0.28	0.44	0.54	0.55	0.43	0.37	0.22	0.11	0.08	0.08	0.12	0.15	0.28
1714G1	25.4	0.15	0.25	0.30	0.31	0.24	0.21	0.12	0.06	0.04	0.04	0.07	0.08	0.16
1714H1	54.9	0.35	0.54	0.65	0.67	0.53	0.45	0.27	0.14	0.09	0.10	0.15	0.18	0.34
1714J1	19.9	0.12	0.19	0.23	0.24	0.19	0.16	0.09	0.05	0.03	0.03	0.05	0.06	0.12
1714Z2	192.7	1.64	1.67	2.83	2.80	3.99	1.39	1.08	0.72	0.64	0.84	1.04	1.15	1.65

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 2429.4
SUM OF SUB-DRAINAGE AREAS = 2610.3
TOTAL FLOW IN = 222.87
TOTAL FLOW OUT = 289.37

NOTE *** TRIBS E1, F1, G1 AND H1 ARE INCLUDED IN A2

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1714A1	6	73	100.24	2	32.28				
	7	73	20.95	7	20.36				
	8	73	6.37	4	10.62				
	9	73	1.05	8	1.22				
	10	73	0.23	14	0.0				
	11	73	0.05	4	0.0				
	12	73	15.97	1	3.20				
	1	74	77.02	6	19.03				
	2	74	49.84	3	65.70				
	3	74	53.24	3	39.08	24	27.18		
	4	74	20.73	7	23.33				
	5	74	61.16	5	11.84				
1714A2	6	73	83.53	2	27.84				
	7	73	17.16	7	18.21				
	8	73	6.17	4	9.60				
	9	73	1.53	8	1.61				
	10	73	1.39	14	1.50				
	11	73	1.42	4	1.27				
	12	73	13.08	1	2.61				
	1	74	63.71	6	15.72				
	2	74	42.19	3	54.37				
	3	74	44.17	3	32.85	24	22.99		
	4	74	21.27	7	19.91				
	5	74	50.40	5	9.71				

TRIBUTARY FLOW INFORMATION FOR ILLINOIS 10/23/75

LAKE CODE 1714 LAKE DECATUR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1714B1	6	73	0.48	2	0.15				
	7	73	0.31	7	0.11				
	8	73	0.06	4	0.11				
	9	73	0.01	8	0.01				
	10	73	0.01	14	0.01				
	11	73	0.03	4	0.03				
	12	73	0.18	1	0.05				
	1	74	0.65	6	0.17				
	2	74	0.45	3	0.59				
	3	74	0.45	3	0.34	24	0.23		
	4	74	0.21	7	0.20				
	5	74	0.37	5	0.07				
1714C1	6	73	2.72	2	0.01				
	7	73	1.76	7	0.01				
	8	73	0.34	4	0.65				
	9	73	0.08	8	0.08				
	10	73	0.06	14	0.07				
	11	73	0.15	4	0.16				
	12	73	1.13	1	0.31				
	1	74	3.85	6	0.99				
	2	74	2.58	3	3.34				
	3	74	2.55	3	1.87	24	1.33		
	4	74	1.19	7	1.13				
	5	74	2.10	5	0.40				
1714D1	6	73	1.53	2	0.45				
	7	73	0.99	7	0.37				
	8	73	0.19	4	0.37				
	9	73	0.04	8	0.05				
	10	73	0.03	14	0.04				
	11	73	0.08	4	0.09				
	12	73	0.62	1	0.17				
	1	74	2.12	6	0.54				
	2	74	1.44	3	1.87				
	3	74	1.42	3	1.05	24	0.74		
	4	74	0.68	7	0.62				
	5	74	1.16	5	0.23				
1714E1	6	73	1.25	2	0.37				
	7	73	0.79	7	0.28				
	8	73	0.15	4	0.28				
	9	73	0.03	8	0.04				
	10	73	0.03	14	0.03				
	11	73	0.07	4	0.07				
	12	73	0.48	1	0.14				
	1	74	1.70	6	0.42				
	2	74	1.19	3	1.50				
	3	74	1.13	3	0.85	24	0.59		
	4	74	0.54	7	0.51				
	5	74	0.93	5	0.18				

TRIBUTARY FLOW INFORMATION FOR ILLINOIS 10/23/75

LAKE CODE 1714 LAKE DECATUR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1714F1	6	73	0.99	2	0.31				
	7	73	0.62	7	0.24				
	8	73	0.12	4	0.24				
	9	73	0.03	8	0.03				
	10	73	0.02	14	0.02				
	11	73	0.05	4	0.06				
	12	73	0.40	1	0.11				
	1	74	1.39	6	0.34				
	2	74	0.96	3	1.25				
	3	74	0.93	3	0.68	24	0.48		
	4	74	0.42	7	0.40				
	5	74	0.76	5	0.15				
1714G1	6	73	0.57	2	0.17				
	7	73	0.34	7	0.13				
	8	73	0.07	4	0.13				
	9	73	0.01	8	0.02				
	10	73	0.01	14	0.01				
	11	73	0.03	4	0.03				
	12	73	0.22	1	0.06				
	1	74	0.76	6	0.19				
	2	74	0.54	3	0.71				
	3	74	0.51	3	0.40	24	0.27		
	4	74	0.24	7	0.23				
	5	74	0.42	5	0.08				
1714H1	6	73	1.22	2	0.37				
	7	73	0.76	7	0.28				
	8	73	0.15	4	0.28				
	9	73	0.03	8	0.04				
	10	73	0.03	14	0.03				
	11	73	0.06	4	0.07				
	12	73	0.48	1	0.13				
	1	74	1.70	6	0.42				
	2	74	1.16	3	1.50				
	3	74	1.13	3	0.85	24	0.59		
	4	74	0.54	7	0.51				
	5	74	0.93	5	0.18				
1714J1	6	73	0.45	2	0.13				
	7	73	0.27	7	0.10				
	8	73	0.05	4	0.10				
	9	73	0.01	8	0.01				
	10	73	0.01	14	0.01				
	11	73	0.02	4	0.02				
	12	73	0.17	1	0.05				
	1	74	0.59	6	0.15				
	2	74	0.42	3	0.54				
	3	74	0.40	3	0.31	24	0.21		
	4	74	0.19	7	0.18				
	5	74	0.34	5	0.06				

TRIBUTARY FLOW INFORMATION FOR ILLINOIS 10/23/75

LAKE CODE 1714 LAKE DECATUR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1714ZZ	6	73	12.66	2	4.30				
	7	73	1.76	7	1.08				
	8	73	0.79	4	1.02				
	9	73	0.13	8	0.14				
	10	73	0.09	14	0.05				
	11	73	0.24	4	0.26				
	12	73	6.23	1	1.59				
	1	74	6.23	6	1.59				
	2	74	3.60	3	4.98				
	3	74	4.81	3	3.51	24	2.52		
	4	74	2.18	7	2.07				
	5	74	6.80	5	1.36				

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 75/10/23

171401
39 49 30.0 088 57 11.0
LAKE DECATUR
17115 ILLINOIS

11EPALES 2111202
3 0018 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/08	09	15 0000	15.9		18	550	8.20	196	0.120	0.500	6.600	0.101
	09	15 0004	15.9	9.0		530	8.20	195	0.120	0.600	6.530	0.100
	09	15 0015	15.9	9.1		530	8.20	195	0.120	0.500	6.630	0.098
73/08/09	09	45 0000	27.4		48	477	8.50	184	0.030	1.000	3.580	0.013
	09	45 0012	25.6	4.5		468	7.30	183	0.120	0.900	3.630	0.067
	09	45 0015	24.1	0.5		442	7.50	184	0.180	1.000	2.810	0.066
73/10/18	17	25 0000	18.4		18	417	8.00	201	0.040	0.500	1.180	0.062
	17	25 0005	18.0	7.6		414	7.90	202	0.040	0.400	1.150	0.062
	17	25 0015	17.9	7.8		412	7.90	200	0.040	0.500	1.200	0.062

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/08	09	15 0000	0.145	35.9
	09	15 0004	0.131	
	09	15 0015	0.149	
73/08/09	09	45 0000	0.064	193.8
	09	45 0012	0.107	
	09	45 0015	0.144	
73/10/18	17	25 0000	0.111	6.3
	17	25 0005	0.129	
	17	25 0015	0.146	

STORET RETRIEVAL DATE 75/10/23

171402
39 50 08.0 088 54 32.0
LAKE DECATUR
17115 ILLINOIS

11EPALES
3

2111202
0012 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/08	09 45	0000	15.4		16	600	8.20	210	0.090	0.500	7.400	0.071
	09 45	0004	15.4	9.2		600	8.20	205	0.080	0.500	7.500	0.069
	09 45	0010	15.3	9.2		600	8.20	220	0.090	0.500	7.570	0.063
73/08/09	09 25	0000	27.8		14	535	8.30	270	0.060	1.500	3.660	0.017
	09 25	0006	27.8	10.4		537	8.30	260	0.050	1.000	3.650	0.021
73/10/18	17 45	0000	18.5			440	8.20	212	0.060	0.800	0.580	0.058
	17 45	0008	17.6	8.2		432	8.10	212	0.040	0.600	0.590	0.053

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/08	09 45	0000	0.120	5.3
	09 45	0004	0.109	
	09 45	0010	0.099	
73/08/09	09 25	0000	0.095	43.1
	09 25	0006	0.101	
73/10/18	17 45	0000	0.152	24.0
	17 45	0008	0.148	

32

STORET RETRIEVAL DATE 75/10/23

171403
39 51 55.0 088 52 48.0
LAKE DECATUR
17115 ILLINOIS

11EPALES
3

2111202
0006 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/08	10 15 0000		14.9		15	612	8.30	230	0.100	0.500	7.610	0.063
	10 15 0005		14.9	9.5		612	8.30	230	0.100	0.500	7.710	0.060
73/08/09	09 05 0000		28.1		14	585	8.10	260	0.090	1.400	3.960	0.014
	09 05 0003		28.0	9.2		586	8.00	280	0.070	1.300	4.130	0.023
73/10/18	18 00 0000		17.3	13.2		492	8.50	244	0.040	1.000	0.040	0.039

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/08	10 15 0000		0.130	3.0
	10 15 0005		0.112	
73/08/09	09 05 0000		0.116	41.7
	09 05 0003		0.155	
73/10/18	18 00 0000		0.173	33.9

APPENDIX E

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 75/10/23

1714A1
39 49 50.0 088 58 35.0
SANGAMON RIVER
17199 7.5 DECATUR
O/DECATUR LAKE
HWY 48 BRDG IN SE DECATUR
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/02	09 05		5.500	1.200	0.024	0.022	0.090
73/07/07	08 34		5.800	2.900	0.054	0.015	0.065
73/08/04	08 15		3.400	1.000	0.052	0.098	0.155
73/09/08	08 30		0.850	4.500	0.340	0.035	0.155
73/10/14	08 35		1.000	0.650	0.057	0.043	0.100
73/11/04	08 35		0.860	1.100	0.036	0.048	0.080
73/12/01	08 35		0.540	0.700	0.020	0.036	0.250
74/01/06	08 35		7.600	0.600	0.056	0.064	0.095
74/02/03	08 35		8.800	0.600	0.050	0.085	0.145
74/03/03	08 35		8.900	1.600	0.025	0.065	
74/03/24	08 15		4.800	0.900	0.040	0.015	0.030
74/04/07	08 30		8.000	0.900	0.050	0.055	0.195
74/05/05	08 35		6.600	0.200	0.037	0.014	0.045

STORET RETRIEVAL DATE 75/10/23

1714A2
39 55 10.0 088 48 10.0
SANGAMON RIVER
17 7.5 ARGENTA
I/DECATUR LAKE
MACON CO HWY 25 BRDG 2.8 MI N OF OAKLEY
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/02	10 45		8.600	2.100	0.080	0.067	0.175
73/07/07	10 51		7.900	1.100	0.020	0.069	0.260
73/08/04	10 20		4.500	0.240	0.036	0.079	0.175
73/09/08	10 35		0.120	1.150	0.126	0.099	0.240
73/10/14	10 45		1.020	0.525	0.044	0.040	0.095
73/11/04	10 40		1.240	1.350	0.081	0.340	0.400
73/12/01			2.600	0.600	0.064	0.148	0.345
74/01/06	10 40		0.460	0.300	0.080	0.024	0.085
74/02/03	10 40		9.400	0.400	0.025	0.065	0.095
74/03/03	10 40		8.800	1.400	0.020	0.065	
74/03/24	10 50		2.500	0.875	0.047	0.012	0.027
74/04/07	10 45		0.200	0.300		0.005	0.005
74/05/05	10 40		6.600	0.700	0.050	0.012	0.045

STORET RETRIEVAL DATE 75/10/23

171481
39 54 45.0 088 48 10.0
UNNAMED CREEK
17 7.5 ARGENTA
T/DECATUR LAKE
MACON CO HWY 25 BRDG 2.4 MI N OF OAKLEY
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/02	10 30		6.800	2.520	0.069	0.025	0.040
73/07/07	10 44		7.800	1.380	0.046	0.046	0.110
73/08/04	10 00		5.000	0.180	0.044	0.050	0.080
73/09/08	10 10		0.440		0.082	0.069	0.240
73/10/14	10 30		0.750	0.650	0.022	0.063	0.128
73/11/04	11 00		0.790	1.100	0.036	0.034	0.065
73/12/01			3.400	1.100	0.052	0.040	0.190
74/02/03	11 00		7.400	0.100	0.020	0.035	0.075
74/03/03	11 00		8.700	1.400	0.030	0.060	
74/03/24	11 00		4.800	0.100K	0.010	0.010	0.015
74/04/07	11 00		8.000	1.400	0.045	0.045	0.345
74/05/05	11 00		6.720	0.300	0.055	0.010	0.050

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/10/23

1714C1
39 48 10.0 088 53 20.0
BIG CREEK
17 7.5 DECATUR
I/DECATUR LAKE
HWY 121 BRDG 1.4 MI S OF US HWY 36
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/02	10	10	7.700	1.380	0.160	0.040	0.060
73/07/07	09	15	8.000	1.050	0.110	0.033	0.050
73/08/04	09	25	4.000	1.100	0.048	0.044	0.060
73/09/08	09	45	1.820	2.100	0.096	0.550	0.920
73/10/14	09	30	0.640	0.800	0.190	0.066	0.180
73/11/04	09	25	2.600	0.250	0.034	0.038	0.095
73/12/01			3.800	0.800	0.052	0.044	0.195
74/02/03	09	25	8.200	0.200	0.025	0.030	0.030
74/03/03	09	25	8.700	1.700	0.025	0.065	
74/03/24	09	20	0.940	0.300	0.050	0.015	0.035
74/04/07	09	25	0.220	0.400		0.005	0.010
74/05/05	09	25	6.600	0.200	0.080	0.010	0.050

STORET RETRIEVAL DATE 75/10/23

171401
39 47 50.0 088 52 40.0
FINLEY CREEK
17 7.5 DECATUR
T/DECATUR LAKE
SEC RD BRDG 1.5 N OF MT ZION
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/02	09 50		7.200	0.660	0.198	0.605	0.700
73/07/07	09 00		8.800	2.900	0.147	0.280	0.350
73/08/04	09 00		4.000	0.360	0.023	0.100	0.190
73/09/08	09 20		0.530	1.050	0.078	2.400	2.600
73/10/14	08 53		0.750	0.700	0.032	0.065	0.140
73/11/04	09 05		4.716	1.150	0.250	0.990	1.100
73/12/01	09 05		6.600	0.100K	0.036	0.184	0.345
74/01/06	09 05		7.560	0.900	0.058	0.066	0.100
74/02/03	09 05		7.500	0.800	0.025	0.115	0.260
74/03/03	09 05		8.900	2.000	0.030	0.060	
74/03/24	09 00		0.960	0.300	0.070	0.015	0.040
74/04/07	09 05		1.600	0.100		0.005K	0.005
74/05/05	09 05		6.600	0.200	0.040	0.010	0.055

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/10/23

1714E1
40 02 20.0 088 50 42.0
UNNAMED STREAM
17 15 MARION
T/DECATUR LAKE
2NDRY RD BRDG 5 MI E OF MARION
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/02	14 15		8.000	0.750	0.021	0.015	0.035
73/07/07	13 10		9.600	0.100K	0.019	0.013	0.025
73/08/04	13 35		5.000	0.100K	0.005K	0.021	0.045
73/09/08	15 00		0.490	1.380	0.084	0.052	0.180
73/10/14	16 05		0.660	2.500	0.460	0.082	0.220
73/11/04	14 30		4.500	0.600	0.022	0.016	0.080
73/12/01			5.300	0.100K	0.016	0.020	0.170
74/02/03	14 30		7.000	0.700	0.075	0.040	0.090
74/03/03	14 30		8.800	4.600	0.027	0.060	
74/03/24	14 35		4.800	0.400	0.035	0.015	0.025
74/04/07	14 30		7.980	1.400	0.050	0.035	0.105
74/05/05	14 30		8.720	0.700	0.315	0.010	0.060

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/10/23

17141
40 02 25.0 088 47 50.0
FRIENDS CREEK
17 15 MORDA
T/DECATUR LAKE
2NDRY RD BRDG 8 MI E OF MARDA
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/02	14	06	8.100	0.420	0.027	0.009	0.025
73/07/07	13	00	9.500	0.100K	0.013	0.009	0.025
73/08/04	13	25	5.500	1.320	0.046	0.012	0.030
73/09/08	14	15	0.500	1.300	0.075	0.046	0.165
73/10/14	16	30	0.470	0.450	0.046	0.054	0.150
73/11/04	14	55	1.360	0.700	0.013	0.012	0.110
73/12/01			5.500	0.500	0.040	0.036	0.190
74/02/03	14	55	6.900	0.400	0.040	0.040	0.080
74/03/03	14	55	8.900	1.900	0.015	0.065	
74/03/24	14	50	2.900	0.100K	0.030	0.020	0.025
74/04/07	14	55	2.400	0.100K	0.015	0.005	0.005K
74/05/05	14	55	6.600	0.200	0.050	0.010	0.055

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/10/23

171431
39 55 00.0 088 47 20.0
UNNAMED STREAM
17 T.5 ARGENTA
T/DECATUR LAKE
2NDRY RD BRDG 4MI NW OF CERRO GORDO
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/02	11 00		5.200	0.855	0.046	0.110	0.130
73/07/07	10 56		7.000	0.600	0.018	0.082	0.135
73/08/04	10 35		3.600	0.250	0.078	0.087	0.130
73/09/08	11 00		0.770	1.050	0.100	0.168	0.250
73/10/16	10 14		0.470	0.750	0.033	0.052	0.145
73/11/04	10 15		1.400	0.750	0.011	0.280	0.360
73/12/01			3.300	0.400	0.020	0.130	0.330
74/02/03	10 15		7.000	0.300	0.020	0.040	0.072
74/03/03	10 45		8.900	1.700	0.015	0.065	
74/03/24	10 13		5.040	0.100K	0.005K	0.015	0.030
74/04/07	10 15		8.000	1.100	0.040	0.035	0.120
74/05/05	10 15		6.500	0.400	0.145	0.010	0.055

K VALUE KNOWN TO BE
LESS THAN INDICATED

4/21

STORET RETRIEVAL DATE 75/10/23

1714M1
39 58 58.0 088 39 00.0
WILLOW BRANCH
17 15 HEMENT
T/DECATUR LAKE
2NDRY RD BRDG 4.5 MI SW OF MONTICELLO
1IEPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/02	11 30		8.500	0.640	0.092	0.019	0.047
73/07/07	12 08		9.500	0.100K	0.016	0.019	0.055
73/08/04	13 00		5.450	0.240		0.027	0.060
73/09/08	13 45		2.200	1.050	0.022	0.038	0.135
73/10/14	14 30		0.500	0.750	0.032	0.058	0.145
73/11/04	14 00		3.200	0.450	0.018	0.030	0.060
73/12/01			4.800	0.100K	0.024	0.028	0.375
74/02/03	14 00		8.600	0.600	0.035	0.080	0.150
74/03/03	14 00		8.800	1.500	0.015	0.060	
74/03/24	14 05		0.940	0.800	0.070	0.015	0.035
74/04/07	14 00		8.000	1.200	0.040	0.035	0.150
74/05/05	14 00		6.600	0.200	0.095	0.012	0.057

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/10/23

1714J1
39 46 30.0 088 57 27.0
SAND CREEK
17 7.5 DECATUR
T/DECATUR LAKE
2NDRY RD BRDG 3 MI E OF ELWIN
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/02	09 35		9.600	0.480	0.105	0.030	0.055
73/07/07	08 40		10.500	1.700	0.078	0.033	0.075
73/08/04	08 35		5.900		0.005K	0.058	0.100
73/09/08	08 50		0.560	3.020	0.176	0.160	0.630
73/10/14	09 45		0.550	1.600	0.075	0.058	0.135
73/11/04	08 50		6.300	0.100K	0.006	0.025	0.040
73/12/01			7.300	0.100K	0.016	0.028	0.180
74/02/03	08 50		8.800	0.300	0.017	0.045	0.070
74/03/03	08 50		8.800	1.600	0.010	0.060	
74/03/24	08 50		0.920	0.200	0.065	0.010	0.050
74/04/07	08 50			0.200	0.015	0.005	0.005
74/05/05	08 50		6.720	0.400	0.055	0.017	0.055

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/10/23

1714AA A51714AA P004300
39 58 58.0 088 40 23.0
MONTICELLO WASTE WATER
17199 PIATT COUNTY
T/DECATUR LAKE
SANGAMON RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/07/11			1.700	3.400	0.063	6.400	6.800	0.410	0.515
73/08/03	08 30		3.400	2.200	0.038	4.400	4.715	0.459	0.620
73/09/10			5.100	2.700	0.091	8.900	9.300	0.240	0.190
73/10/03	08 30		3.300	6.600	0.050	8.400	8.600	0.232	0.200
73/11/08	13 05		1.600	7.250	0.150	7.500	8.100	0.224	0.210
73/12/06			3.600	2.700	0.081	2.900	3.450	0.561	0.281
74/01/03	10 30		0.760	10.000	0.040K	3.800	4.600	0.340	0.400
74/02/05	15 00		1.520	7.500	0.180	3.600	4.900	1.500	0.875
74/03/11	09 00		4.300	4.000	0.050K	3.700	4.500	1.120	1.000
74/05/06	08 45		1.840	7.100	0.160	4.400	5.000	0.858	1.000
74/06/06	13 10		0.440	8.300	0.092	4.200	4.514	0.794	1.000
74/07/11	08 30		0.024	7.350	0.180	4.900	6.675	0.556	0.625
74/08/02	14 00		1.200	10.000	0.240	6.200	7.400	0.829	0.315

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/10/23

1714DA AS1714DA P003000
39 46 54.0 088 52 57.0
MOUNT ZION
17 7.5 DECATUR
T/DECATUR LAKE
FINLEY CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/07/16	08 00								
CP(T)- 73/07/16	16 00		3.900	4.600	0.085	10.300	13.350	0.210	0.266
73/08/02	08 00								
CP(T)- 73/08/02	16 00		2.600	1.700	0.040	3.900	4.600	0.320	0.380
73/09/03	08 00								
CP(T)- 73/09/03	16 00		1.000	4.500		14.000	14.500	0.160	0.240
73/10/01	08 00		10.800	2.200	0.086	11.000	16.100	0.170	0.160
73/11/02	08 00								
CP(T)- 73/11/02	16 00		0.340	12.000	2.000	14.700	16.000	0.190	0.180
74/02/04	08 00							0.350	0.630
74/03/04	08 00		7.920	1.100	0.050	5.400	6.400	0.440	0.380
74/04/08	08 00		8.400	1.500	0.050K	6.200	7.700	0.500	0.400
74/05/01	08 00		5.520	3.200	0.120	10.000	11.000	0.300	0.400
74/06/05	08 00		6.300	2.100	0.070	6.500	7.300	0.440	0.530
74/08/09	08 30		11.200	2.700	0.084	13.000	13.500	0.210	0.210
74/09/10	11 00		4.700	4.100	0.050		11.500	0.240	0.230
74/10/02	09 00		7.760	7.900	0.083	13.000	15.000	0.180	0.220

K VALUE KNOWN TO BE
LESS THAN INDICATED